REMARKS

Applicants initially wish to address the Examiner's finality of the Office Action. Applicants submit that the Examiner's final rejection is premature and should be withdrawn. Applicants wish to point out that the two new grounds of rejection introduced by the Examiner were not necessitated by applicants' amendments to the claims, contrary to the Examiner's assertion at page 5 of the action. Newly cited U.S. Patent No. 4,357,436 (Zucker et al.) was cited for teaching a solvent for dissolving an elastomer, with the Examiner asserting that it would have been obvious "to employ the solvents of Zucker when mixing Theodore's ingredients." Newly cited Japanese abstract JP04119830 was cited for teaching oil as a solvent for a styrene-butadiene rubber cement. Neither of the rejections based on the teachings of these newly cited references was necessitated by applicants' previous amendment to claim 1. Applicants respectfully request that the finality of the rejection be withdrawn. MPEP §706.07(c)

Rejection under 35 U.S.C. §103 – Claims 1, 3-6 and 8-11

In the latest Office Action, claims 1, 3-6 and 8-11 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Theodore (US 4,615,851) in view of Zucker et al. (newly cited; (US 4,357,436). Zucker et al. teach a method of forming a thermal insulating product which comprises fibers and fillers, and a curable binder system comprising an elastomer and a silicone resin. The elastomer is partially dissolved in a solvent to form a paste, fillers and/or fibers are added, then the mixture is formed into a shape and cured by heating. The Examiner asserts that it would have been obvious to employ the ingredients and sintering technique of Theodore in the process of Zucker "in order to make a composition from which one could remove the solvent and sinter the

partially cured articles." The Examiner further reasons that it would have been obvious to use the solvents of Zucker when mixing Theodore's ingredients.

Applicants first wish to point out that the references are not from analogous arts, contrary to the Examiner's assertion. Zucker et al. do not teach or suggest a method of preparing thin-walled articles, but rather is directed to a method of forming a thermal insulating material. Nor do Zucker et al. teach or suggest the use of a solvent for a thermoplastic elastomer polymeric binder as taught in Theodore et al. Rather, Zucker et al. clearly teach solvents for an elastomer rubber, e.g., a randomly-sequenced styrene butadiene rubber cement, which is eventually cured (crosslinked) to form a solid, e.g., it will maintain its shape during further processing. See col. 3, lines 37-40.

In contrast, the organic solvent used in the present invention is selected from a class of solvents which are solvents for the glassy-elastomeric segment of the thermoplastic elastomer (block) copolymer binder component of the binder system. The solvent functions to release the crosslinks formed by the glassy segments of the block copolymer to reduce the viscosity of the binder and allow mixing at temperatures below 100°C.

Theodore et al. require the use of heat to release the crosslinks of their block copolymer to achieve mixing. See col. 9, lines 56-63. Zucker et al. do not teach or suggest combining a thermoplastic elastomer polymeric binder with a solvent for the purpose of achieving such a mixture without the use of heat. Nor do Zucker et al. teach forming a **homogeneous** solution of a thermoplastic elastomer polymeric binder and a solvent as claimed. Rather, Zucker et al. teach partially dissolving an elastomer rubber in a solvent to form a paste. See col. 2, lines 9-10. As taught in the present invention, the homogenous solution is achieved by dissolving the binder in an organic solvent with shear. See page 9, lines 1-5.

Accordingly, one skilled in the art would certainly not look to the solvents of Zucker et al. to dissolve the thermoplastic elastomer polymeric binder of Theodore.

There is nothing in Zucker et al. which suggests that one could achieve a homogeneous mixture of a (block-sequenced) thermoplastic elastomer polymeric binder and a solvent without the use of heat as taught and claimed in the present invention.

Nor would one be motivated to use the components and sintering technique of Theodore in Zucker et al. as Zucker et al. are clearly not concerned with forming a thin-walled green article, but rather are directed to the formation of a solid thermal insulating material which is achieved by heat curing.

Applicants further wish to point out that Zucker et al. do not teach evaporation of their solvent prior to extrusion as recited in claim 1, but rather teach removal of the solvent during curing, which occurs after the mixture is extruded or molded. See col. 3, lines 26-40.

Claims 1, 3-6, and 8-11 are clearly patentable over Theodore and Zucker et al.

Rejection under 35 U.S.C. §103 – Claims 1-4, 7-8, 11-13 and 28-29

Claims 1-4, 7-8, 11-13 and 28-29 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Theodore in view of JP 04119830A (newly cited; abstract) and Takeuchi et al. (US 5,733,499). The Japanese abstract is directed to a styrene-butadiene rubber cement composition for use in forming pneumatic tires. The Examiner has cited the abstract for teaching oil as a solvent for styrene-butadiene rubber cements. The Examiner further asserts that it would have been obvious to use the ceramic and oxide components of Takeuchi and the oil solvent cited in the Japanese abstract to formulate the composition of Theodore "in order to produce better mixing of the styrene-butadiene rubber with the ceramics of Takeuchi."

Again, there is no motivation to combine the teachings of these references. First, the Japanese abstract is directed to the manufacture of pneumatic tires, not thin-walled articles. Further, as pointed out above, a randomly-sequenced styrene-

butadiene rubber as taught in the Japanese abstract is a material which will crosslink upon curing to retain its shape (tire), not a **thermoplastic** material like the styrene-butadiene **block** copolymer used in the thermoplastic elastomer binder of the present invention. Accordingly, one would not look to the Japanese abstract to form a homogeneous solution of a thermoplastic elastomeric polymeric binder system and a solvent as claimed.

Nor is there any motivation to use a solvent in Theodore as Theodore et al. teach the use of heat to achieve mixing of their binder composition. And, as previously pointed out, Takeuchi et al. teach away from evaporation of their solvent (see col. 1, lines 60-63).

Accordingly, the teachings of the references are not properly combinable as proposed by the Examiner. Even if combined, such references clearly do not suggest a method of forming a thin-walled article in which a thermoplastic elastomer polymeric binder is dissolved in an organic solvent to form a homogeneous solution as claimed. Nor do the combined teachings of the references suggest evaporating the solvent from the mixture prior to extruding the mixture to form a thin-walled green article as claimed. Claims 1-4, 7-8, 11-13 and 28-29 are clearly patentable over the cited references.

The Examiner appears to misapprehend applicants' invention. As previously pointed out to the Examiner, it is well known in the art that binders and binder systems are not neutral systems that can be formed successfully using arbitrary ceramic and metal powders, solvents, or binders. As applicants have attempted to explain, the unique aspect of the present invention lies in the use of a liquid binder system formed using an organic solvent which is a solvent for the glassy segment in the thermoplastic elastomeric polymeric binder. See the specification at page 6, lines 12-17. The use of such a solvent allows the binder system to be prepared at low temperatures of less than 100°C, preferably about 50°C. See the specification at page 5 and claims 28 and 29.

None of the prior art references, taken alone or in combination, teaches the claimed method in which a **thermoplastic** elastomer polymer is dissolved in a solvent to form a **homogeneous** solution **without the use of heat** for the purpose of forming a thin-walled green article.

Conclusion

For all of the above reasons, applicants submit that claims 1-13 and 28-29 and are patentable over the cited references. Early notification of allowable subject matter is respectfully requested.

Respectfully submitted,

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